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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,788	02/06/2002	Timothy Warner	02023	4514

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EXAMINER

MORILLO, JANELLE COMBS

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/066,788	<b>Applicant(s)</b> WARNER, TIMOTHY	
	<b>Examiner</b> Janelle Combs-Morillo	<b>Art Unit</b> 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 March 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 and 9-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7 and 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chakrabarti et al (US 2002/0121319 A1).

Chakrabarti et al teaches a process for manufacturing Al-Zn-Cu-Mg alloy products of high compressive strength (see Table 3) by casting an ingot, homogenizing, extruding, solution heat treating, quenching, cold stretching, and aging to obtain high compressive strength (see [0054], [0022]). Chakrabarti et al said process can be used for Al-Zn-Cu-Mg alloy products made into upper wing structures of a commercial aircraft wing, which are compressively loaded (see [0004]), thereby requiring high compressive yield strengths. Chakrabarti et al teaches an aging practice that "won't unduly sacrifice strength properties while still improving the corrosion resistance of high performance, 7XXX aluminum alloys" (see [0022]). Chakrabarti et al teaches the use of 7XXX alloys, such as 7055 (see Table 1), to achieve compressive yield strengths about 10-15% higher than previous attempts (see [0020]). Broadly, Chakrabarti et al teaches performing said process on alloys comprising: 6-10% Zn, 1.2-1.9% Mg, 1.2-2.2% Cu, and one or more of: up to 0.4% Zr, up to 0.4% Sc, and up to 0.3% Hf (see [0023]).

In Table 3, Chakrabarti et al teaches a compressive yield strength of 73.2 ksi in the L direction. Chakrabarti does not mention that this is the maximum compression YS in the L

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direction. However, because Chakrabarti et al teaches that compressive yield strength is a result effective variable (dependent on alloy composition and aging treatment, see Table 3 and [0020]), and because Chakrabarti et al teaches a substantially overlapping alloy composition as well as aging cycle, it is held to be within the level of one of ordinary skill in the art to determine the optimum or workable ranges of said variable (that is, to obtain the maximum compression YS in the L direction), given the disclosure of Chakrabarti.

Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e. they produce a new and unexpected result. However, said parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Concerning claims 2-6, as stated above, Chakrabarti et al teaches an overlapping Al-Zn-Mg-Cu alloy composition. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in Chakrabarti because Chakrabarti finds that the prior art composition in the entire disclosed range has a suitable utility.

Concerning the particular aging steps of claims 7-12, Chakrabarti et al teaches aging in 2 or 3 steps- aging at a first temperature of 230-250°F for 2-18 hrs (see [0017]), aging at a second temperature of 305-325°F for 6-18 hr (see [0018]), and optionally aging at a third temperature of 230-250°F for 2-18 hrs (see [0019]), which overlaps the presently claimed aging temperature

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ranges and equivalent times. The minimum equivalent time taught by Chakrabarti et al for a 3 stage aging process is approximately >157 hrs, while the equivalent time for a 2 stage aging process is approximately >155 hrs. These values were calculated by summing the individual  $t_{eq}$  (as set forth in the equation given by the specification and recited below) of the three (or two) minimum times and temperatures taught by the prior art-  $t_{eq}(\text{total})=t_{eq1}+t_{eq2}+t_{eq3}$

first aging	$T_1=230^\circ\text{F}$	$t_1=2\text{hr}$	$t_{eq1}=1.9\text{hrs,}$
second aging	$T_2=310^\circ\text{F}$	$t_2=6\text{hr}$	$t_{eq2}=153\text{ hrs,}$
third aging	$T_3=230^\circ\text{F}$	$t_3=2\text{hr}$	$t_{eq3}=1.9$
			$t_{eq\text{ total}}=156.8\text{ hrs}$

$$t_{eq} = \frac{t(e^{-16,000/T})}{e^{-16,000/T_{ref}}}$$

Because Chakrabarti teaches substantially overlapping aging time and temperature ranges, it is held that Chakrabarti has created a prima facie case of obviousness of the presently claimed invention.

### ***Response to Arguments/Amendments***

3. In the response filed on March 5, 2004, applicant amended claims 1-7 and 9-12, canceled claims 8 and 13-24, and submitted various arguments traversing the rejections of record.

Applicant's argument that the present invention is allowable over the prior art of record because Chakrabarti teaches at Table 3 a minimum aging time of 6 hours at  $160^\circ\text{C}$ , which

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corresponds to an equivalent aging time of 258 hours at 120°C, has not been found persuasive. The examiner agrees that 6 hrs at 160°C corresponds to 258 hrs at 120°C, however, at [0018] Chakrabarti teaches that the second ageing step can be performed between 305-325°F, wherein at an exposure temperature of 310°F would require an exposure time of 6-18 hrs (p. 3 lines 21-22). For an aging temperature of 310°F and time of 6 hrs, the  $teq=153$  hrs. Therefore, it is apparent that Chakrabarti teaches an overlapping aging time and temperature schedule (see rejection above).

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
GEORGE WYSZOMIERSKI  
PRIMARY EXAMINER

JCM   
May 17, 2004